

CLAIMS

1. A copper alloy sputtering target containing 0.01 to (less than) 0.5wt% of at least 1 element selected from Al or Sn, and containing either Mn or Si or both in a total amount of 0.25wtppm or less.
2. A copper alloy sputtering target containing 0.05 to 0.2wt% of at least 1 element selected from Al or Sn, and containing Mn or Si in a total amount of 0.25wtppm or less.
3. A copper alloy sputtering target according to claim 1 or claim 2, further containing one or more selected from among Sb, Zr, Ti, Cr, Ag, Au, Cd, In and As in a total amount of 1.0wtppm or less.
4. A copper alloy sputtering target according to claim 1 or claim 2, further containing one or more selected from among Sb, Zr, Ti, Cr, Ag, Au, Cd, In and As in a total amount of 0.5wtppm or less.
5. A copper alloy sputtering target according to claim 1 or claim 2, further containing one or more selected from among Sb, Zr, Ti, Cr, Ag, Au, Cd, In and As in a total amount of 0.3wtppm or less.
6. A copper alloy sputtering target according to any one of claims 1 to 5, wherein the inevitable impurities excluding gas components are 10wtppm or less.
7. A copper alloy sputtering target according to claim 6, wherein the inevitable impurities excluding gas components are 1wtppm or less.
8. A copper alloy sputtering target according to any one of claims 1 to 7, wherein Na and K are respectively 0.05wtppm or less; U and Th are respectively 1wtppb or less; oxygen is 5wtppm or less; nitrogen is 2wtppm or less; and carbon is 2wtppm or less.
9. A copper alloy sputtering target according to claim 8, wherein Na and K are respectively 0.02wtppm or less; U and Th are respectively 0.5wtppb or less; oxygen is 1wtppm or less; nitrogen is 1wtppm or less; and carbon is 1wtppm or less.
10. A copper alloy sputtering target according to any one of claims 1 to 9, wherein the average crystal grain size is 100 μm or less, and the average grain size variation is within $\pm 20\%$.
11. A semiconductor element wiring formed with the copper alloy sputtering target according to any one of claims 1 to 10.

12. A semiconductor element wiring according to claim 11 formed as a semiconductor element wiring seed layer.
13. A semiconductor element wiring according to claim 12 formed as a seed layer on a barrier film of Ta, Ta alloy or the nitrides thereof.
- 5 14. A manufacturing method of a copper alloy sputtering target according to any one of claims 1 to 10, comprising the steps of preparing a mother alloy as the additional element; melting this in a molten metal of copper or low concentration mother alloy to form an ingot; and processing this ingot to form a target.
- 10 15. A manufacturing method of a copper alloy sputtering target according to claim 14, wherein a mother alloy within the solid solubility limit is prepared.